



THE UNIVERSITY OF CHICAGO

DEPARTMENT OF CHEMISTRY

CHICAGO, ILL.

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MEMORANDUM FOR THE RECORD

RE: A STUDY OF THE KINETICS OF THE REACTION OF HYDROGEN PEROXIDE WITH

HYDROGEN SULFIDE IN AQUEOUS SOLUTION

BY J. H. COLEMAN AND J. H. COLEMAN, JR.

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1. The reaction of hydrogen peroxide with hydrogen sulfide in aqueous solution was studied at various temperatures and concentrations. The reaction was found to be first order with respect to hydrogen peroxide and second order with respect to hydrogen sulfide.

2. The rate of reaction was measured by the method of continuous variations.

3. The results of the study are given in the following table.

TABLE I. Rate of Reaction of Hydrogen Peroxide with Hydrogen Sulfide

Temperature, °C. 25.0 30.0 35.0 40.0 45.0

Concentration of H<sub>2</sub>O<sub>2</sub>, M. 0.01 0.02 0.03 0.04 0.05

Concentration of H<sub>2</sub>S, M. 0.01 0.02 0.03 0.04 0.05

Rate of reaction, M./min. 0.001 0.002 0.003 0.004 0.005

Order of reaction with respect to H<sub>2</sub>O<sub>2</sub> 1.0 1.0 1.0 1.0 1.0

Order of reaction with respect to H<sub>2</sub>S 2.0 2.0 2.0 2.0 2.0

Overall order of reaction 3.0 3.0 3.0 3.0 3.0